

WHAT IS CLAIMED IS:

1. A semiconductor device comprising:
a semiconductor substrate including an element
5 partitioning trench and a mask aligning trench;
a first insulation deposited in the element
partitioning trench; and
a second insulation partially deposited in the mask
aligning trench formed from the same substance as the first
10 insulation.
2. The semiconductor device according to claim 1,
wherein the mask aligning trench has an upper edge, and
wherein an upper surface of the second insulation defines a
15 step with the upper edge.
3. A method for manufacturing a semiconductor device,
the method comprising:
forming an element partitioning trench and a mask
20 aligning trench in a semiconductor substrate;
depositing an insulation in the element partitioning
trench and the mask aligning trench;
applying a protective mask on the insulation deposited
in the element partitioning trench;
25 etching the insulation deposited in the mask aligning
trench to remove some of the insulation; and
flattening an upper surface of the semiconductor
substrate.
- 30 4. The method according to claim 3, wherein the step
of forming the element partitioning trench and the mask
aligning trench includes:
forming a coating on the semiconductor substrate,

wherein the coating has a pattern of openings corresponding to the element partitioning trench and the mask aligning trench; and

etching the semiconductor substrate using the coating as a mask to form the element partitioning trench and the mask aligning trench, wherein the insulation depositing step includes depositing the insulation without removing the coating.

5. The method according to claim 4, wherein the flattening step is performed through rotary grinding, and the coating functions as a stopper.

6. The method according to claim 5, wherein the semiconductor substrate is a silicon substrate, the insulation is formed from silicon oxide, and the coating is formed from silicon nitride, the method further comprising the step of forming a silicon oxide film on the semiconductor substrate prior to the formation of the element partitioning trench and the mask aligning trench, wherein the coating is formed on the silicon oxide film.

7. A method for manufacturing a semiconductor device, the method comprising the steps of:

forming a silicon oxide film on an upper surface of a semiconductor substrate;

forming a silicon nitride film on the silicon oxide film;

partially removing the silicon nitride film and the silicon oxide film;

forming an element partitioning trench and a mask aligning trench by etching the semiconductor substrate using a residue of the silicon nitride and silicon oxide films as

a mask, wherein the element partitioning trench and the mask aligning trench have substantially the same depths;

simultaneously depositing a first layer of insulation and a second layer of insulation in the element partitioning
5 trench and in the mask aligning trench, respectively;

coating the first insulation with a protective mask;

etching the second insulation so that a step is formed between an upper surface of the semiconductor substrate and an upper surface of the second insulation; and

10 removing the protective mask.

8. The method according to claim 7, wherein the first insulation and the second insulation are made of the same material.